SOROKIN, Ye.G., inzhener; FROSTYAKOV, I.M., inzhener; FEDOROVA, T.N., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy redaktor

[Centrifugal casting of sewer pipes of 50 mm. diameter] TSentrobezhnaia otlivka kanalizatsionnykh trub iametrom 50 mm. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1956. 39 p. (MLRA 9:7)
(Sewer pipe) (Centrifugal casting)

SOROKIN, Ye. G.
p. 3

25(1) PHASE I BOOK EXPLOITATION SOV/1745

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Kiyevskoye oblastnoye upravleniye

Peredovaya tekhnologiya liteynogo proizvodstva (Advanced Technology of Casting Production) Kiyev, Mashgiz, 1958. 152 p. 6,000 copies printed.

Ed.: V. K. Serdyuk; Tech. Ed.: Ya. V. Rudenskiy; Editorial Board: A.Ya. Artamonov, K. I. Vashchenko (Resp.Ed.), S. Sh. Zaslavskiy, and B. V. Polyak; Chief Ed. (Yuzhnoye Division, Mashgiz): V. K. Serdyuk, Engineer.

PURPOSE: This book is intended for engineering personnel of foundries, and workers of scientific research institutions.

COVERAGE: This book is a collection of articles and papers given by representatives of plants, scientific-research institutes, and vuzes on problems of advanced methods of production and mechanization of the foundry industry at a conference organized by the Kiyev o'blast Board of NTO(Scientific Engineering Section) of the machine-building industry and the Institute of Mechanical Engineering of the Academy of Science, Ukrainian SSR. Experience gained in centrifugal

Card 1/6

pipe precision investment casting, shell-and metal-mold casting, use of materials preventing scorching, quick drying mold mixtures [blends], and problems of mechanization and automation of foundry processes are covered in this book. An article by N.Kh. Ivanov, deals with a new cast iron welding method developed by the author with the assistance of electrowelder G. A. Pirozhenko, and called "cold electric welding of cast iron by means of a metal electrode with an indirect arc action." As the title indicates, the arc acts only indirectly on the welded metal passing between the electrode and the build-up metal. Such welding insures shallow fusion of the cast iron. The formation of a cementite surface layer is either absent or limited to a very thin layer of not more than 0.2 mm., making for easy mechanical working. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

MECHANIZATION OF FOUNDRY PROCESSES

AVAILABLE: Library of Congress

GO/fal
6-22-59

Card 6/6

SOROKIN, Ye.G.; GOLOVKIN, P.S.

Centrifugal casting of cast-iron sewage pipes on multirotor machines "Lipetsk-2." Biul.tekh.-ekon.inform.Gos.nauch.-issl.-inst.nauch. i tekh.inform. no.6:17-19 '62. (MIRA 15:7)
(Iron founding--Equipment and supplies)

L 22458-66 EWT(d)/EWP(h)/EWP(1)
ACC NR: AP6002542 (A,N) SOURCE CODE: UR/0286/65/000/023/0043/0043

AUTHORS: Kolot, I. I.; Gladkiy, V. I.; Sorokin, Ye. K.; Zhardinovskiy, G. M.; Sluchevskiy, V. A.; Gul'ko, A. I.; Kurochkin, A, S.

ORG: none

TITLE: Crane with variable extension boom. Class 35, No. 176667

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 43

TOPIC TAGS: crane, loading machinery, transport equipment

ABSTRACT: This Author Certificate presents a crane with variable extension boom which has a pinned supporting strut. The end of the strut is connected through a compound pulley system to the crane boom. To increase the lifting capacity with extended boom by eliminating compressive loads and to decrease crane height during transport, the pinned supporting strut is mounted at the base of the boom and is equipped with a diverting pulley mounted on the bottom part of this pulley so that the pulley forces are directed upward, opposing the forces resulting in the strut due to tension in the boom pulley system (see Fig. 1).

Card 1/2 UDC: 621.873.3

L 22458-66

ACC NR: AP6002542

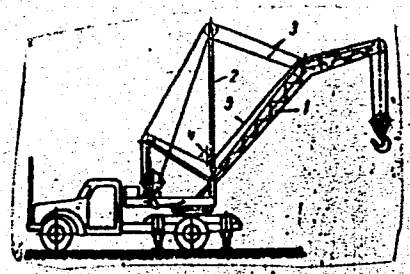

Fig. 1. 1 - boom; 2 - strut; 3 - boom pulley system; 4 - diverting pulley; 5 - load cable.

Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 28Oct64

Card 2/2

SOROKIN, Ye.M.

[Handbook for the Diesel tractor operator] Spravochnik traktorista dizel'nykh traktorov. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1953. 312 p. (MLRA 7:6)
(Tractors)

SOROKIN, Ye.M.; KRYUKOV, V.L., redaktor; PEVZNER, V.I.; tekhnicheskiy redaktor; PERESYPKINA, Z.D., tekhnicheskiy redaktor

[Diesel tractor operator's manual] Spravochnik traktorista dizel'nykh traktorov. 2-e izd. Moskva, Gos. izd-vo selkhoz. lit-ry, 1954. 327 p. (MLRA 8:1)
(Tractors)

BELKIN, Yu.L., inzh.; PAVLOVSKIY, D.Ya., inzh.; SOROKIN, Ye.M., inzh.; KARAKOVA, N.I., inzh.; SOLDATENKOV, S.I., inzh.; BARSUKOV, A.F., red.; PECHENKIN, I.V., tekhn.red.

[New tractors and agricultural machinery; results of tests conducted in 1957] Novye traktory i sel'skokhoziaistvennye mashiny; rezul'taty ispytanii 1957 goda. Moskva, M-vo sel'skogo khoz.SSSR. No.1. 1959. 277 p. (MIRA 13:9)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Tractors) (Agricultural machinery)

BOGDASHIN, A.S.; BOGORODSKIY, A.A.; VINGARDT, N.B.; GORBUNOV, V.I.; GORBUNOV, V.R.; DUROV, V.K.; YERMAKOV, A.L.; IVANOV, A.A.; KARAKOVA, N.I.; KOBYLYAKOV, L.M.; KOZLOVSKIY, N.I.; MARAKHTANOV, K.P.; MIRUMYAN, G.N.; NECHETOV, G.P.; NOVIKOV, A.G.; OL'KHOVSKIY, K.I.; PESTRYAKOV, A.I.; POLAPANOV, A.V.; SKLYAREVSKAYA, Ye.Kh.; SOLDATENKOV, S.I.; SOROKIN, Ye.M.; TRUSHINA, Z.V.; FEDOROV, P.F.; FEDOSEYEV, A.M.; FROG, N.P.; SHAMAYEV, G.P.; YANOVSKIY, V.Ya.; ORLKHOV, A.D., spetsred.; DEYEVA, V.M., tekhn.red.

[Handbook on new agricultural machinery] Spravochnik po novoi tekhnike v sel'skom khoziaistve. Moskva, Gos.izd-vo sel'khoz. lit-ry, 1959. 364 p. (MIRA 13:2)
(Agricultural machinery)

GUREVICH, A.M.; SOROKIN, Ye.M.; SHKOL'NIKOV, A.B., red.; GOR'KOVA, Z.D., tekhn. red.; TRUKHINA, O.N., tekhn. red.

[Tractors and motor vehicles] Traktory i avtomobili. Moskva, Izd-vo sel'khoz. lit-ry, zhurnalov i plakatov, 1961. 567 p. (MIRA 15:3)
(Tractors) (Motor vehicles)

SOROKIN, Ye.M.

Operational and dynamic features of the DT-75 tractor. Trakt. i sel'khozmash. 32 no.2:1-4 F '62. (MIRA 15:2)
(Tractors)

SOROKIN, Ye.M.

American wheeled tractors; technological review. Trakt. i sel'khozmash. 33 no.1:41-45 Ja '63. (MIRA 16:3)
(United States—Tractors)

GUREVICH, A.M.; SOROKIN, Ye.M.; SHKOL'NIKOV, A.B., red.

[Tractors and motor vehicles] Traktory i avtomobili. Izd.3., ispr. i dop. Moskva, Izd-vo "Kolos," 1964. 543 p. (MIRA 17:5)

1. SOROKIN, Yu.S.

2. USSR (600)

4. Gas Torches

7. Cast iron tips for torches, Lit.proizv. no. 5, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

SOROKIN, Ye.S.

Small twin electronic relays with contact grid. Stek. i ker. 15 no.1:29-30 Ja '58. (MIRA 11:1)
(Glass furnaces) (Automatic control)

SOROKIN, Ye.S., kandidat tekhnicheskikh nauk.

Closed solution of the problem of forced vibrations of bars with hysteresis. Issl. po teor. sooruzh. no.4:304-322 '49. (MLRA 10:8)
(Elastic rods and wires--Vibration) (Hysteresis)

124-58-6-7191

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 6, p 124 (USSR)

AUTHOR: Sorokin, Ye.S.

TITLE: On the Nonelastic Reaction of Construction Materials to Vibration (K voprosu neuprugogo soprotivleniya stroitel'nykh materialov pri kolebaniyakh)

PERIODICAL: Nauchn. soobshch. Tsentr. n.-i. in-t prom. sooruzh., 1954, Nr 15, 75 pages

ABSTRACT: A determination is made of the coefficient of internal damping [i.e., the ratio of irreversibly damped-out energy input per cycle to the elastic work corresponding to the cycle's maximum deformation (amplitude)] for construction materials under conditions of cyclic strain. It is assumed herein that the nonelastic reaction forces causing the internal absorption are (in absolute magnitude) proportional to the elastic (restoring) forces but that, with respect to the latter, they are out of phase by 90°---in accordance with an earlier hypothesis advanced by the author [V sb.: Issledovaniya po dinamike sooruzheniy (Studies in Structural Dynamics). Stroyizdat, 1951] . Having analyzed the various methods for determining the damping coefficient of a material, the author deems

Card 1/3

On the Nonelastic Reaction of Construction Materials to Vibration

the most convenient and reliable to be the method of damped free vibrations ---providing use is made 1) of the precise relationship between the absorption coefficient and the logarithmic damping factor proposed by him, and 2) of his improved method for treating the evolution of the damped vibrations. He expounds a new method for determining the damping coefficient with respect to the axes of the resonance hysteresis loop obtained for stable resonance vibrations excited electrically (through self-excited oscillations and through external excitation with a sonic-frequency oscillator). This method was laboratory-tested on flexural vibrations of wooden, steel, and concrete specimens prepared in the shape of a tuning fork (to minimize the drain of vibration energy into the support piece). An experimental investigation was made of the effect upon the internal-damping coefficient of the stress-cycle asymmetry, i.e., of the dynamic-stress/static-stress ratio. The static stress could be varied by pivoting the cantilever specimen (with a fixed load on its end) fitted into a specially designed pivotal support piece which made it possible to swing the cantilever specimen in a vertical plane through an angle of 90°, which, in other words, made it possible to vary the static stress in the specimen (the transverse vibrations of which were occurring in a direction perpendicular to its axis) without changing the frequency of its free vibrations. It was found that in steel and especially in reinforced concrete the presence of even

124-58-6-7191

On the Nonelastic Reaction of Construction Materials to Vibration

relatively small static stresses (in asymmetric cycles) caused a sharp drop in the value of the damping coefficient. A study was made of the influence of the vibration frequency on the damping coefficient. It was observed that, when the specimens vibrated at extremely high frequencies (200 cps at an amplitude of ∿1 mm), aerodynamic drag did not noticeably affect the vibration-energy damping coefficient of the wooden, steel, or concrete specimens. It was found that, in the frequency range up to 150 cps, the damping coefficient of the tested materials was not a function of the strain rate (i.e., of the frequency).

B.K.Karapetyan

1. Construction--Materials 2. Materials--Vibration
3. Vibration--Analysis

Card 3/3

SOROKIN, Yevgeniy Semenovich; AFANAS'YEV, A.M., kandidat tekhnicheskikh nauk, nauchnyy redaktor; YEGOROVA, N.O., redaktor izdatel'stva; BOROVNEV, N.K., tekhnicheskiy redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor

[Dynamic calculation of bearing elements of buildings] Dinamicheskii raschet nesushchikh konstruktsii zdanii. Moskva, Gos. izd-vo lit-ry po stroit. i arkhitekture, 1956. 339 p. (MLRA 10:1)
(Structural frames)

SOV/124-58-7-7969 D

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 7, p 96 (USSR)

AUTHOR: Sorokin, Ye.S.

TITLE: Internal Friction and Structural Analysis Relative to Periodic Loads (Vnutrenneye treniye i raschet sooruzheniy na periodicheskiye nagruzki)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Doctor of Technical Sciences, presented to the Mosk. inzh.-stroit. in-t (Moscow Institute of Structural Engineering), Moscow, 1957

ASSOCIATION: Mosk. inzh.-stroit. in-t (Moscow Institute of Structural Engineering), Moscow

1. Physics 2. Friction--Theory 3. Structural analysis--Theory 4. Materials--Properties

Card 1/1

SOROKIN, Ye.S., kand.tekhn.nauk; STEPANOVA, E.S., tekhn.red.; YEGOROVA, N.O., red. izd-va

[Internal and external resistance of vibrating solid bodies] Vnutrennie i vneshnie soprotivleniia pri kolebaniiakh tverdykh tel. Moskva, Ges. izd-vo lit-ry po stroit. i arkhit. 1957. 64 p. (Akademiia stroitel'stva i arkhitektury SSSR Institut stroitel'nykh konstruktsii. Nauchnoe soobshchenie, no. 3)

(MIRA 11:10)

(Solids--Vibration)

RUDNIK, Viktor Yakovlevich, kand.tekhn.nauk; SOROKIN, Ye.S., doktor tekhn. nauk, otv.red.; ZVORYKINA, L.N., red.izd-va; SHKLYAR, S.Ya., tekhn.red.

[Standard methods for designing ceilings of coal preparation plants for dynamic loads] Tipovye dinamicheskie raschety perekrytii zdanii ugleobogatitel'nykh fabrik. Moskva, Ugletekhizdat, 1959. 166 p. (MIRA 12:12)
(Coal preparation--Equipment and supplies) (Damping (Mechanics)) (Strains and stresses)

SOROKIN, Ye.S. (Moskva)

Statistical theory of inertial friction in solids. Stroi. mekh. i rasch.soor. 1 no.3:8-14 '59. (MIRA 12:8)
(Friction) (Elastic solids)

PHASE I BOOK EXPLOITATION SOV/4125

Sorokin, Ye. S., Doctor of Technical Sciences

K teorii vnutrennego treniya pri kolebaniyakh uprugikh sistem (Theory of Internal Friction During Oscillations of Elastic Systems). Moscow, Gosstroyizdat, 1960. 130 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya stroitel'stva i arkhitektury SSSR. Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy.

Ed. of Publishing House: G.N. Vilkov; Tech. Ed.: E.S. Stepanova.

PURPOSE: This book is intended for scientific workers and aspirants working on the dynamics of elastic systems, as well as for design amd planning engineers meeting problems of the dynamics of installations.

COVERAGE: The author examines the applied theory of internal friction in solid materials. This theory is based on practical experience as well as on the statistical method for studying the deformation of an inhomogeneous elastic-plastic body. The final form of this theory is the complex theory of internal friction published by the author at an earlier date. In the present book the author

Card 1/5

determines new possibilities for this theory showing its application to a wide range of problems dealing with irregular vibrations of elastic systems. His findings constitute the development of systematic research work conducted in this field, since 1930, by the Tsentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy (Central Scientific Research Institute of Building Structures). No personalities are mentioned. There are 152 references: 72 Soviet, 40 German, 37 English, 1 French, 1 Italian, and 1 Danish.

TABLE OF CONTENTS:

SOROKIN, Ye.S. (Moskva)

Effect of internal friction on stresses in beams and slabs subjected to impulsive loads. Stroi. mekh. i rasch. soor. 2 no. 2:14-18 '60. (MIRA 14:5)

(Strains and stresses)

SOROKIN, Ye.S., doktor tekhn.nauk

Unsteady vibrations of elastic systems with internal frictions.
Trudy MIIT no.131:89-110 '61. (MIRA 14:5)
(Elastic solids—Vibration)
(Internal friction)

SOROKIN, Ye.S. (Moskva)

Elementary theory of pulse resonance. Stroi.mekh.i rashch.soor. 4 no.5:27-33 '62. (MIRA 15:11)
(Vibration)

SOROKIN, Ye.S.

Conference on the problem of vibrations of mechanical systems.
Stroi.mekh.i rashch.soor. 4 no.5:48-3 of cover '62.
(MIRA 15:11)

(Vibration--Congresses)

SOROKIN, Ye.S., inzh.

Modernization of the ADK-500-6 automatic machine. Svar. proizv. no.8:34 Ag '64. (MIRA 17:9)

1. Bryanskiy avtomobil'nyy zavod.

L 31366-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b) JD

ACCESSION NR: AT5006654 S/2649/64/000/193/0005/0041

AUTHOR: Sorokin, Ye. S. (Doctor of technical sciences, Professor)

TITLE: Experimental methods for determining the internal friction in solids

SOURCE: Moscow. Institut inzhenerov zheleznodorozhnogo transporta. Trudy, no. 193, 1964. Voprosy prikladnoy mekhaniki (Problems in applied mechanics), 5-41

TOPIC TAGS: structural damping, solid mechanics, hysteresis damping, friction

ABSTRACT: A critical review of fifteen experimental methods which are used in studying internal friction (also called internal damping, solid damping, structural damping, internal energy dissipation, et cetera) in solids is divided into nine groups of basically different techniques in order to facilitate the elucidation of the correct use of these methods, to discuss erroneous interpretations of some of them, and to point out the ineffective and the useless ones.

Eight quantities which can be measured in various external manifestations of internal friction are enumerated; each of them can be taken as a quantitative measure of the internal friction. The approach and procedure

Card 1/4

ACCESSION NR: AT5006654

used in the methods for studying the internal friction depend on which of these quantities are determined experimentally.

The basic conventional quantitative measure of internal friction $\phi = \Delta W/W$ (where ΔW is the energy absorbed per cycle, W is the potential energy of the solid), called the absorption coefficient, and $\gamma = \phi/2\pi$, the internal friction coefficient, are used in judging the effectiveness of the method under discussion.

The following groups of methods are appraised and their advantages, shortcomings, and attainable degrees of accuracy are examined:

1) The method of free damped vibrations.

2) Two hysteresis methods (static and dynamic).

3) The method of resonance hysteresis.

ACCESSION NR: AT5006654 O

4) Two methods of forced vibrations in the resonance region (using electrical or inertial vibration exciters).

5) Two energy methods (using electrical or inertial vibration exciters).

6) Two phase-shift methods (using a harmonic or a constant disturbing force).

7) Three thermal methods (using measurements of the heat generated per cycle).

8) The wave method (using measurements of stress-wave parameters).

9) The relaxation method (using measurements of relaxation strains or stresses).

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ACCESSION NR: AT5006654

The last method is not recommended for the study of internal friction because it yields quantitative and qualitative values that are too low in comparison with other methods.

ASSOCIATION: Institut inzhenerov zheleznodorozhnogo transporta, Moscow (Institute of Engineering and Railroad Transport

SUBMITTED: 00 ENCL: 00 SUB CODE: AS, ME

NO REF SOV: 015 OTHER: 025 ATD PRESS: 3186-F

Card 4/4

SOROKIN, Ye.S. (Moskva)

Internal friction in materials and structural elements with nonlinear elastic characteristics. Stroi.mekh. i rasch.sooruzh. 6 no.3:25-28 '64. (MIRA 18:3)

SOROKIN, Ye.S.

Modernization of the K-51 kerosine torch. Lit. proizv. 5: 39-40 My '64. (MIRA 18:5)

SOROKIN, Ye.S., inzh.; GOZ, A.Z., inzh.; BRAVERMAN, M.Z., inzh.

Hard facing of track blocks with powder wire. Svar. proizv. no.9:29-30 S '64. (MIRA 17:12)

1. Bryanskiy avtomobil'nyy zavod.

SOKOKIN, Ye.S.

Impregnation of porous castings. Lit. proizv. no.12:40-41 D '64.
(MIRA 18:3)

SOROKIN, Ye.S.

Comments on V.G. Ebanoidze's articles. Izv. AN SSSR. Mekh. no.1: 206-208 Ja-F '65. (MIRA 18:5)

SOROKIN, Ye.S., inzh.; BRAVERMAN, M.Z., inzh.

Welding the pins of a T-180 tractor with a modernized P-912 automatic machine. Svar. proizv. no.10:38-39 O '65.
(MIRA 18:10)

1. Bryanskiy avtomobil'nyy zavod.

[redacted], M. A.

Dissertation: "The Investigation of Chemosynthesis in Sulfate-reducing Bacteria."
Cand Biol Sci, Inst of Microbiology, Acad Sci USSR, Moscow, Oct-Dec 53. (Vestnik Akademii Nauk, Moscow, Jun 1954)

SO: SUM 318, 23 Dec 1954

RAZUVAYEV, G.A.; SOROKIN, Yu.A.

Reaction of carbon tetrachloride with ethyl alcohol. Zhur.ob.khim. 23 no.9: 1519-1522 S '53. (MLRA 6:10)

1. Gor'kovskiy Gosudarstvennyy universitet.
(Carbon tetrachloride) (Ethyl alcohol)

Sorokin, Yu. A.

c Free-radical reactions of lead tetraacetate. G. A. Razuvaev, Yu. A. Ol'dekop, Yu. A. Sorokin, and V. M. Tverdova (State Univ., Gorki). *Zhur. Obshchei Khim.* 26, 1033–5(1956).—Shaking 1 g. $Pb(OAc)_4$ and 30 g. Hg in C_6H_6 20 hrs. gave 97.4% HgOAc and $Pb(OAc)_2$; the latter with Na_2SO_4 yielded 0.68 g. $PbSO_4$. Refluxing 2 g. $Pb(OAc)_4$ and 50 g. Hg in C_6H_6 6 hrs. gave similarly 2.27 g. HgOAc and 1.27 g. $PbSO_4$ (after treatment with Na_2SO_4). Heating 3 g. $Pb(OAc)_4$ and 15 g. $Hg(OAc)_2$ in C_6H_6 until gas evolution ceased, sepg. the ppt., and washing the org. soln. with H_2O gave, after steam distn. and treatment of distillate with KI, 0.002 g. MeHgI, while the ppt. (11.58 g.) gave $Pb(OAc)_2$ (yielding 1.88 g. $PbSO_4$ and Na_2SO_4), and 71.6% HgOAc. Heating 0.5 g. $Pb(OAc)_4$ with 15 g. $Hg(OAc)_2$ in 100 ml. AcOH similarly gave 11 g. HgOAc, while the filtrate with KI yielded 0.03 g. MeHgI and 17 g. [illegible] the residue after this, treated with KI, gave 14.85 g. mixed HgI_2 and PbI_2. Attempts to isolate Me derivs. of Pb in similar reactions initiated by heat, ultraviolet light, or Bz_2O_2 failed. Cf. *C.A.* 50, 2451*h*.

G. M. Kosolapoff

Sorokin, Yu. A.

6
1-Jum

Photoreactions of organochromium compounds. G. A. Razuvaev, [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Ph_4CrOH [illegible] [illegible] $Ph_4CrI \cdot 2CHCl_3$ II [illegible] (cf. [illegible] [illegible]). Ultraviolet irradiation of I [illegible] [illegible] change to green, yielding 79.3% Ph_2 and a resinous [illegible] after steam distn. gave PhOH [illegible] [illegible] the reaction run in MeOH also gave Ph_2 and PhOH. Irradiation of II in $CHCl_3$ 30 hrs. gave a mixt., pink-violet in color (iodine color), yielding Ph_2 (100%) and no detectable C_6H_6. Thus II contained the 4 rings in the form of 2 biphenylyl structures and not a chain. The structure of I was probably similar to that of II, the 5th Ph group forming a phenolate anion. Thus, the Zeiss structure of I and II with a "sandwich" structure of 2 biphenylyl groups in which one Ph of each of such groups was linked to the central Cr atom appeared to be confirmed further. G. M. Kosolapoff

PM-XSL
MT

AUTHOR RAZUVAYEV, G.A., SOROKIN, YU A., DOMRACHEV, G.A., 20-6-30/59
PETUKHOV, G.G., TSVETKOV, YU. D, MOLIN, YU.N.

TITLE On the structure of organochromic compounds.
(O stroyenii khromorganicheskikh soyedineniy.- Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 6, pp 1293-1294
(U.S.S.R.)

ABSTRACT In a paper recently published by Fischer the synthesis of neutral dibenzolchromium and its salts is described and a report is made concerning some further aromatic derivatives of the chromium-(0). This author assumes that the latter compound has an A-structure analogous to ferrocaen. Recently a series of reports was published in which the separation from the reaction products of C_6H_4MgBr and also of the dibenzolchromium with waterless chlorinechromium beside "pentaphenylchromhydroxide" and "tetra" as well as "triphenylchromiodides" is described by Hein. According to a bold, but not precisely proved assumption of Zeiss, the polyphenyl derivatives of chromium have a common bis-aren-structure. If it is assumed that in the chromium iodides (π-benzol, π-diphenyl) and di-(π-diphenyl)-chromium the diphenylgroups are covalently connected, 10 % of D should be expected in the diphenyl separated after the

CARD 1/3

reaction with $LiAlD_4$. If, however they have a B-structure (illustration 1) diphenyl would contain no deuterium. The composition and the yield of the organic products of the light dispersion of the organochromic compounds in the chloroform agree well with the B-structures. It is known that the compounds of the B-series are paramagnetic and have the magnetic moment = 1.7 of the Bohrs magneton. This corresponds to the existence of a not coupled electron in their molecule. Therefore, the photographing of the spectra of the paramagnetic electron-resonance of such compounds was interesting in order to obtain data about the localisation of the free electron. The absorption spectrum of the aqueous solution of one of these substances (III) is shown by illustration 2. The existence of a superfine structure and the qualitative analysis of the intensity distribution shows that the not coupled electron is in interaction with the hydrogen nuclei of the aromatic rings. (2 illustrations, 1 Slavic reference.)

ASSOCIATION: Scientific Research Institute for Chemistry at the Gorkij State University "N.I. LOBACHEVSKIY".
MOSCOW PHYSICAL'TECHNICAL INSTITUTE.
Institute for Chemical Physics of the Academy of Science of the U.S.S.R.

5(1, 2)

AUTHORS: Korshunov, I. A., Vertyulina, L. N., Razuvayev, G. A., Corresponding Member, AS USSR, Sorokin, Yu. A., Domrachev, G. A.

SOV/20-122-6-20/49

TITLE: Polarographic Reduction of Some Chromium Aromatic Compounds of Sandwich Structure (Polyarograficheskoye vosstanovleniye nekotorykh khromaromaticheskikh soyedineniy sendvichevogo stroyeniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 6, pp 1029-1031 (USSR)

ABSTRACT: While the polarographic behavior of the bis-cyclopentadienyl compounds was described sufficiently in detail (Ref 1), there is one paper only (Ref 2) on the reduction of the cation $((C_6 H_6)_2 Cr)^+$. As in the laboratory of the authors dibenzene-(I)-, ditoluene-(II), dimesitylene-(III)-and bis-diphenyl chromium-(IV) iodide were prepared, furthermore the dicumene-(V)-and di-(cyclohexyl benzene)-chromium iodides-(VI) not described in publications, it was interesting to study the polarographic reduction of this series of compounds. The synthesis (according to Ref 3) of the above-mentioned

derivatives ((I)-(VI)) is described together with the yields computed and ascertained. From the concentrated solution of dicumene chromium the compound (V) was precipitated as a cherry-red viscous oil by adding saturated aqueous KJ-solution. The authors did not succeed in crystallizing it. (V) is well soluble in low alcohols, acetone, methylene chloride, dichloro ethane, pyridine, dimethyl formamide, whereas it is practically insoluble in ether, CCl_4, water and benzene.

(VI) is synthesized by a similar method. (VI) was isolated as a dark-red powder from the reaction mixture (with an addition of 50 ml purified n-nonane) by heating for 1.5 hours at 150°. Its solubility in the solvents mentioned in connection with (V) is the same as that of (V). The polarographic investigations of the iodides ((I)-(VI)) were carried out by means of the visual polarograph, which is manufactured by the institute mentioned in the Association. The reduction was carried out on the background of several C.5 N aqueous electrolytes of lithium chloride, sodium hydroxide, potassium nitrate, sodium sulfate, hydrochloric acid and buffer

solutions with pH from 2.3 to 11.75 (Fig 2). The chromium aromatic compounds produce diffusion currents in almost all above-mentioned electrolytes. An exception are hydrochloric acid and the buffer solutions with a pH-value below 2, in which they are precipitated or (e. g. (II)) do not develop any reduction waves. All iodides are reduced within one wave (Fig 1). From the study of the results obtained it can be concluded that the introduction of the alkyl-(V) or cyclohexyl-(VI) substitutent into the aromatic nucleus does not exercise considerable influence upon the quantity of the semiwave--potential. In the transition from (II) to (III) the semiwave is shifted only slightly into the direction of the negative values as compared with (I). In the introduction of an aromatic substituent (IV), however, a marked shift of the potential into the range of positive values takes place. For the time being, it is still difficult to reconcile the polarographic results with the data obtained by other methods. The polarographic method, however, can play a certain role in the investigation of the nature of the class of

compounds in question. There are 3 figures and 4 references, 1 of which is Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut khimii Gor'kovskogo gosudarstvennogo universiteta im. N. I. Lobachevskogo (Scientific Research Institute of Chemistry of the Gor'kiy State University imeni N. I. Lobachevskiy)

SUBMITTED: June 17, 1958

24 (7), 5 (4)

AUTHORS: Bubnov, N. N., Sorokin, Yu. A., Solodovnikov, S. P., Chlorikin, V. M. SOV/48-23-10-35/39

TITLE: Investigation of the Dibenzene-chrome Derivatives by the Method of Paramagnetic Electron Resonance

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 10, pp 1263 - 1264 (USSR)

ABSTRACT: In earlier papers (Refs 1-3) it has already been shown that in highly diluted dibenzene chrome solutions the interaction between the unpaired electron and the protons of the benzene rings, which are in direct connection with the metal (chrome-) atom, manifest themselves by a distinct hyperfine structure of the spectrum of paramagnetic electron resonance. It has already been shown that the introduction of a substituent into the benzene ring influences neither the g-factor of the compound nor the amount of the hyperfine splitting (3.6±0.5 Gs). It was further found that the dissolving temperature, the nature of the solvent or that of the substituent introduced into the benzene ring influences the width of the hyperfine structure component. Further investigations concerned the spin density distribution of the unpaired electron in the molecule, the

Card 1/3

hyperfine splitting, as well as the width of the hyperfine structure component. In this connection, several details, which were obtained from references 1-8 are briefly discussed. Further investigations concerning hyperfine splitting were carried out with the cation of dibenzene chrome with cyclohexyl substituents in both rings. It was found that at low temperatures of the solution of this compound an additional triplet splitting (1 ± 0.5 Gs) of each hyperfine structure component occurs. It is caused by the interaction of the unpaired electron with two protons of a cyclohexyl substituent. An investigation of the influence exerted by various factors on the width of the hyperfine structure component gave the following result: A considerable dilution of the solution with a reduction of temperature leads to a monotonic improvement of the spectral resolving power, i.e. the width of the hyperfine structure component decreases. In some solvents (e.g. alcohols) an anomalous temperature dependence of the spectral resolving power is found; this might be explained by a complex formation between the dibenzene chrome cations and the molecules of the

Investigation of the Dibenzene-chrome Derivatives by the Method of Paramagnetic Electron Resonance

SOV/48-23-10-35/39

solvent. There are 8 references, 5 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR). Institut khimii pri Gor'kovskom gos. universitete (Institute of Chemistry at Gor'kiy State University)

Card 3/3

18.8300

77519
SOV/80-33-1-28/49

AUTHORS: Tseytlin, Kh. L., Sorokin, Yu. I.

TITLE: Effect of Chlorine on the Corrosion of Metals in Hydrochloric Acid

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 163-167 (USSR)

ABSTRACT: The effect of free chlorine (up to 0.9 g/100 ml) on the corrosion of lead, steel, silver, and EI-461 nickel-molybdenum alloy (not otherwise described in article) in hydrochloric acid of different concentrations (10 to 20%) and at different temperatures was studied. The following conclusions were made from the data obtained. Corrosion of lead, steel, silver, and EI-461 alloy in hydrochloric acid is sharply increased by free chlorine in the acid. Comparatively, the increase in the rate of corrosion is highest for EI-461 alloy and silver and lowest for steel. There is no difference in the rate of lead and steel corrosion in hydrochloric acid containing free chlorine. Both metals dissolve

Card 1/3

Effect of Chlorine on the Corrosion of Metals in Hydrochloric Acid

77519
SOV/80-33-1-28/49

vigorously. The rate of corrosion in hydrochloric acid continuously saturated with chlorine increases, with the rise of temperature from 20° to 100°, for lead, steel, and silver, and decreases for the EI-461 alloy. The latter fact is explained by the high sensitivity of the alloy to the free chlorine concentration in the acid, which decreases with increasing temperature. Ag and alloy EI-461 are corrosion resistant in hydrochloric acid, which is a reducing acid. At a low acid concentration and at low temperature, lead is also only slightly corrosive in hydrochloric acid. In the presence of free Cl (Depolarizer of the cathode process) in HCl, as well as in other, similar, cases, Ag, alloy EI-461, lead, and carbon steel corrode rapidly. Experiments conducted by Kh. L. Tseytlin and S. M. Babitskaya in the authors' laboratory (see Association) show that Ti, which is usually easily passivated in oxidizing media, practically does not corrode in a hot hydrochloric

Card 2/3

Effect of Chlorine on the Corrosion of Metals in Hydrochloric Acid

77519
SOV/80-33-1-28/49

acid containing free Cl. There are 7 figures; and 11 references, 1 U.S., 4 German, 6 Soviet. The U.S. reference is: W. G. Whitman and R. P. Russel, Ind. Eng. Ch., 17, 348 (1925).

ASSOCIATION: K. Ye. Voroshilov Institute of Organic Intermediates and Dyes (Institut organicheskikh poluproduktov i krasiteley imeni K. Ye. Voroshilova)

SUBMITTED: March 7, 1958

Card 3/3

5.2200

77535
SOV/80-33-1-44/49

AUTHORS: Sorokin, Yu. I., Tseytlin, Kh. L.

TITLE: Brief Communications. Effect of Chlorine on Corrosion of Metals by HCl in Narrow Gaps

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 1, pp 240-243 (USSR)

ABSTRACT: Corrosion of steel and especially of Pb in gaps by HCl, and also by acid containing free chlorine, depends on the factors regulating supply of HCl to the metal surface and removal of corrosion products. HCl and chlorine concentrations in gaps are less than in original solution. Therefore, in all cases, there is less corrosion in gaps than outside. The corrosion of steel and especially of Pb increases with increasing gap width and with stirring. The corrosion of Pb with 20% HCl in gaps is 20 to 40 times less than that of steel. The solubility of Pb and steel in HCl, in the presence of

Card 1/2

Brief Communications. Effect of Chlorine on Corrosion of Metals by HCl in Narrow Gaps

77535
SOV/80-33-1-44/49

chlorine, increases much less in gaps than outside. The stability of Pb is 3 to 10 times greater than that of steel in thepresence of chlorine in HCl. The volume and gap corrosion of Pb and steel in HCl vapors is much less than in liquid HCl. The corrosion of Pb and steel in gaps is increased 2- to 3-fold by the presence of chlorine in HCl vapors. There is 1 table; 1 figure; and 7 references, 1 U.K., 6 Soviet. The U.K. reference is: R. B. Mears, U. R. Evans, Trans. Faraday Soc., 30, 417 (1934).

ASSOCIATION: K. Ye. Voroshilov Institute of Organic Intermediates and Dyestuffs (Institut organicheskikh poluproduktov i krasiteley imeni K. E. Voroshilova)

SUBMITTED: August 20, 1959 (for the second time)

Card 2/2

S/081/62/000/010/043/085
B168/B180

AUTHORS: Sorokin, Yu. A., Domrachev, G. A.

TITLE: Some considerations on the comparative aromaticity of sandwich compounds of transition metals. The mechanism of electrophilic substitution

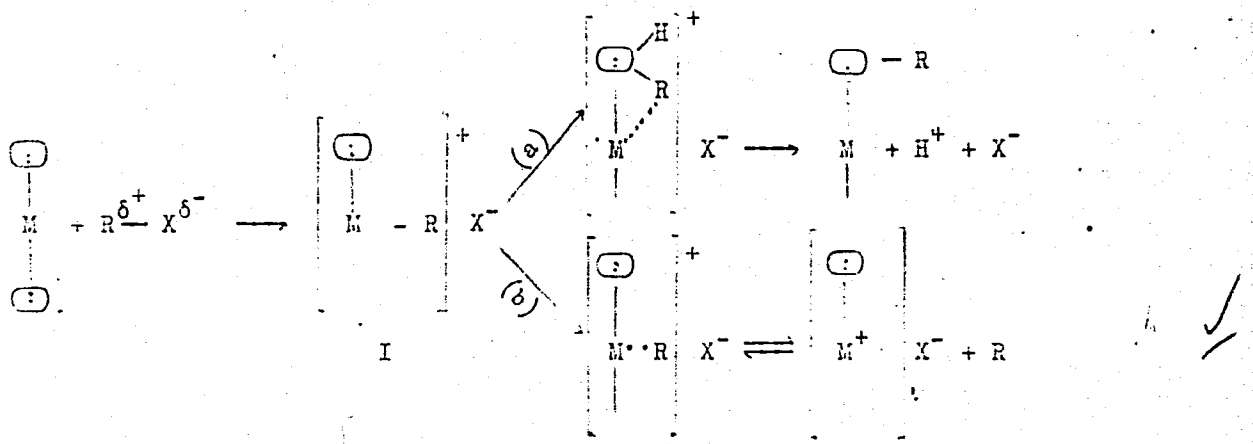
PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1962, 167, abstract 10Zh1 (Tr. po khimii i khim. tekhnol. (Gor'kiy), no. 3, 1961, 665-669)

TEXT: A study of available experimental data on reactions of electrophilic substitution (S_E) in sandwich compounds of type (I), of the influence of the substitutes on the dipole moment of arenchrometricarbonyls (RZhKhim, no. 7, 1960, 25440), of protonization $(C_5H_5)_2M$ (M = Fe, Ru, Os) by strong acids (RZhKhim, 1961, 16B139) and of other facts led the authors to the conclusion that the primary attack of an electrophilic reagent is not on the ring but on the metal atom, the region of maximum electron density of the molecule

Card 1/3

S/081/62/000/010/043/085
B168/B180

Some considerations on the comparative ...



I

A general scheme for the reactions S_E is suggested for I and it is compared with the mechanism of electrophilic substitution in C_6H_6.

Card 2/3

S/081/62/000/010/043/085
B168/B180

Some considerations on the comparative ...

For S_E reactions to take place I must either not be oxidized by the reagent to a stable or unstable cation (method a) or it must be oxidized reversibly (method b). The electrophilic joining of olefins to I probably takes place by a similar mechanism. In all cases the direction of the S_E reaction depends on the nature of the central atom of the metal. [Abstracter's note: Complete translation.]

Card 3/3

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11.1320

24060
S/020/61/138/004/021/023
B103/B203

AUTHORS: Sorokin, Yu. A. and Pshezhetskiy, S. Ya.

TITLE: Formation of hydrazine under the action of γ-radiation on ammonia in liquid and solid state

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 880-883

TEXT: The authors studied the formation of hydrazine N_2H_4 in liquid and solid ammonia under the action of γ-rays. Ammonia was treated in quartz ampuls with γ-rays of Co^{60} with an activity of $2 \cdot 10^4$ curie for $10\text{-}10^4$ min. The radiation intensity was varied between 25 and 790 r/sec. Ammonia was removed by evaporation after irradiation. N_2H_4 was determined photocolorimetrically in hydrochloric acid solution of p-dimethyl-amino benzaldehyde. In the liquid phase, the N_2H_4 yield increases with decreasing temperature. It decreases, however, abruptly by one order of magnitude after overstepping the coagulation point of ammonia (-78°C). The temperature dependence of the N_2H_4 yield in the liquid phase corresponds

Card 1/5

Formation of hydrazine under the action ...

to an activation energy of 3—4 kcal/mole. The authors explain the above-mentioned influence of the phase condition with a change of formation conditions of NH_2 radicals. According to their opinion, the following essential reactions lead to the formation of N_2H_4: (1) $NH_3 \rightleftarrows \begin{cases} NH_2+H \\ NH+H_2 \end{cases}$; (2) $NH_2 + NH_2 \longrightarrow N_2H_4$; (3) $NH + NH_3 \longrightarrow N_2H_4$. The concentration of NH_2 radicals depends on the recombination of hydrogen atoms (H) with their initial NH_2 radical. The withdrawal of an H atom from the initial NH_2 radical is easier in the liquid than in the solid phase. Therefore, any acceptor of H atoms should increase the N_2H_4 yield. The acceptor should be more efficient in the solid phase. Propylene was used as acceptor. To eliminate, as far as possible, the distortion of the solid ammonia lattice by the acceptor molecules, the authors made parallel tests with propane which is no acceptor for H atoms. The N_2H_4 yield in solid ammonia was shown to increase with increasing amount of propylene. Equal amounts of propane had no effect. In liquid ammonia, the N_2H_4 yield did not rise

Formation of hydrazine under the action ...

with the addition of propylene. Although this confirms the assumption of the effect of a recombination of H atoms with the NH_2 radicals, other effects are likely to participate such as the difference in recombination conditions of NH_2 radicals on formation of N_2H_4 (as well as of the reaction of NH radicals with $\dot{N}H_3$ molecules). The liquid phase favors both the formation of $\dot{N}H_2$ radicals and their interaction. In the solid phase, there is no such mobility, and recombination of the $\dot{N}H_2$ radicals, or of NH with NH_3, hardly occurs. These reactions are not favored by low temperatures either, as was confirmed by the electron paramagnetic resonance. The results obtained suggest that there is practically no reaction in the solid phase. It appears that the reaction starts during the thawing of irradiated specimens when the particles have regained a certain mobility. The negative temperature dependence of the N_2H_4 formation in liquid ammonia may depend on: (1) N_2H_4 decomposition. Since with low N_2H_4 concentrations negligible amounts of radiation are absorbed by its molecules as compared

Formation of hydrazine under the action ...

with those of ammonia, the N_2H_4 decomposition should be mainly due to the interaction with, for instance, NH_2 or NH radicals. Such reactions are accelerated with rising temperature, which must lead to a decrease in the N_2H_4 content. The cooperation of the formation reactions of N_2H_4 (reaction 2, for instance) with the above-mentioned decomposition reactions leads to a nonlinear dependence of the N_2H_4 concentration on the energy dose so that the N_2H_4 concentration must attain steady values in the case of sufficiently high energy doses. Experimental data, however, show no deviations from linearity in the range of the doses used. (2) Acceleration of diffusion of NH_2 radicals from the tracks with rising temperature, thus making recombination and N_2H_4 formation less probable. This mechanism corresponds to the value of the negative activation energy in an order of magnitude of 3 — 4 kcal/mole. The authors' N_2H_4 yields of about 0.2 molecules/ev correspond to the value determined in Ref. 1 (Ye. V. Bol'shun, S. Ya. Pshezhetskiy, I.A.Myasnikov, Sborn. Deystviye

Card 4/5

Formation of hydrazine under the action ...

ioniziruyushchikh izlucheniy na neorganicheskiye i organicheskiye sistemy (Effect of ionizing radiation on inorganic and organic systems), Izd.AN SSSR, 1958, p.184) on irradiation of liquid ammonia with fast neutrons (about 0.7 molecules/100 ev). There are 4 figures, 1 table, and 1 Soviet-bloc reference.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

PRESENTED: January 20, 1961, by S. S. Medvedev, Academician

SUBMITTED: October 20, 1960

43232
S/844/62/000/000/047/129
D287/D307

AUTHORS: Sorokin, Yu. A. and Pshezhetskiy, S. Ya.

TITLE: The formation of hydrazine during γ irradiation of solid and liquid ammonia

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 279-281

TEXT: The effect of the state of phase on radiolytic processes was investigated in the case of hydrazine, which was prepared by irradiating liquid and solid ammonia. Experiments to establish the relationship between the yield of hydrazine and temperature during irradiation indicated that the yields increased with decreasing temperatures of liquid NH_3, but decreased sharply on reaching the freezing point of ammonia and were lower in the solid state (by approximately one order of magnitude). This temperature dependence in the liquid state is assumed to be due to decomposition of hydrazine. The required activation energy was 3 - 4 kcal/mole. The observed

Card 1/2

The formation of hydrazine ...

effect of phase change is explained by changes in the conditions for the formation of NH_2 radicals; recombination of these radicals then leads to the formation of hydrazine. Experiments were also carried out on the relationship between the yield of hydrazine and additives in the solid and the liquid state, using propylene as a hydrogen acceptor; parallel experiments were carried out with propane. The yields of hydrazine increased when larger quantities of propylene were added to the solid ammonia; propane did not exert the same effect. No increased yields could be recorded when propylene was added to the liquid ammonia. It can be assumed that the state of phase affects conditions for the recombination of H atoms and NH_2 radicals but other factors should also be taken into account, e.g. conditions for the recombination of NH_2 radicals and conditions under which NH radicals react with the NH_3 molecules. The yields of radicals are also compared with those of hydrazine. There are 3 figures and 1 table.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute im. L. Ya. Karpov)

L 15778-63 EPR/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC/ASD Ps-4/Pr-4
BW/RM/WW/JD/JW/JFW

ACCESSION NR: AP3004986 S/0076/63/037/008/1871/1875

AUTHOR: Sorokin, Yu. A.; Tsivenko, V. I.; Pshezhetskiy, S. Ya. 76 73

TITLE: Hydrazine formation on γ-irradiation of liquid ammonia and of an aqueous ammonia solution

SOURCE: Zhurnal fiz. khimii, v. 37, no. 8, 1963, 1871-1875

TOPIC TAGS: hydrazine, hydrazine formation, nitrogen, hydrogen, gamma induced radiolysis, gamma radiation, radiolysis, ammonia, liquid ammonia, ionic mechanism, aqueous ammonia solution, ammonia decomposition, hydrazine decomposition, decomposition, free radical mechanism

ABSTRACT: The formation of hydrazine in the gamma-ray-induced radiolysis of liquid ammonia and frozen aqueous ammonia at various temperatures has been studied, and possible mechanisms for the reactions have been corsidered. The product yields expressed as mols formed per 100 ev of energy absorbed were determined, and the temperature dependence of the yields was studied at -70, -26, and +15C for liquid ammonia, -195C for solid ammonia, and -195C for frozen

Card 1/4

ACCESSION NR: AP3004986

aqueous ammonia in various concentrations. A Co^{60} source for gamma-irradiation of a sample in a glass ampule capable of withstanding high pressures was used. After evaporation of the ammonia, the hydrazine formed was determined colorimetrically by the color reaction of p-(dimethylamino)benzaldehyde in aqueous solution. For the radiolysis of liquid ammonia with doses on the order of 10^{21} ev/g NH_3, at a dose rate of 2×10^{16} ev/g NH_3·sec, a linear relationship was obtained between hydrazine, hydrogen, and nitrogen concentration and absorbed dose at -70, -26, and +15C. It was found that the yields of N_2 and H_2 were virtually independent of temperature. The yield of hydrazine decreased with an increase in temperature. For example, with an increase from -70 to 15C, the hydrazine yield dropped from 0.18 to 0.01 mol/100 ev, the nitrogen yield rose from 0.12 to 0.21 mol/100 ev, and the hydrogen yield remained at 0.64—0.68 mol/100 ev. Therefore, the nitrogen-yield increase can be attributed to an increase in the decomposition of hydrazine. The decrease in hydrazine yield with an increase in temperature may be due in part to the temperature dependence of the reaction

$$\dot{N}H_2 + N_2H_4 \rightarrow NH_3 + \dot{N}_2H_3, \qquad (1)$$

ACCESSION NR: AP3004986

and in part to an increase in the diffusion rate of $\dot{N}H_2$ radicals from tracks, which prevents their recombination in the tracks to form hydrazine and favors reaction (1) in the "bulk" of the liquid ammonia. In the radiolysis of solid ammonia at -195C, a linear relationship was also obtained between hydrazine concentration and absorbed dose, corresponding to the mechanism of hydrazine formation by recombination of $\dot{N}H_2$ radicals. On an increase in temperature, trapped $\dot{N}H_2$ radicals recombine to form hydrazine. For the radiolysis of the frozen aqueous ammonia solution, the plot of hydrazine concentration versus initial percent NH_3 was characterized by a maximum at 50%, which suggests that water participated in the formation of hydrazine. To explain this participation, a free-radical and an ionic mechanism were proposed. The free-radical mechanism is described by the following reactions, which occur on irradiation:

$$\dot{O}H + NH_3 \rightarrow H_2O + \dot{N}H_2, \quad (2)$$

$$\dot{H} + NH_3 \rightarrow H_2 + \dot{N}H_2, \quad (3)$$

$$H_2O^+ + NH_3 \rightarrow H_3O^+ + \dot{N}H_2. \quad (4)$$

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ACCESSION NR: AP3004986

The ionic mechanism is described by the reactions:

$$NH_4^+ + e(aq) \rightarrow NH_3 + H, \quad (5)$$

$$NH_4^+ + e(aq) \rightarrow \dot{N}H_2 + H_2, \quad (6)$$

$$NH_3^+ + OH^- \rightarrow \dot{N}H_2 + H_2O, \quad (7)$$

$$NH_3^+ + e(aq) \rightarrow \dot{N}H_2 + H. \quad (8)$$

The final step of the reactions is the formation of hydrazine by recombination of the $\dot{N}H_2$ radicals on heating. Orig. art. has: 5 figures, 14 formulas, and 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Scientific Research Institute)

SUBMITTED: 28Oct62 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: CH NO REF SOV: 004 OTHER: 001

Card 4/4

VERTYULINA, L.N.; KORSHUNOV, I.A.; SOROKIN, Yu.A.

Reduction of bis-cumenechromium and bis-(m-diisopropylberyene) chromium iodides on a mercury dropping electrode. Zhur. ob. khim. 35 no.7:1133-1139 Jl '65. (MIRA 18:8)

ACCESSION NR: AP4032493 S/0080/64/037/004/0727/0734

AUTHOR: Dmitriyev, M. T.; Sorokin, Yu. A.

TITLE: Radiation-chemical formation of nitric oxide in the nitrogen-oxygen system at high temperatures.

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 4, 1964, 727-734

TOPIC TAGS: nitric oxide, preparation, radiation chemical synthesis, nitrogen oxygen system, nitrogen oxidation, energy yield, ion recombination coefficient, nitrogen oxide decomposition, thermal oxidation

ABSTRACT: The radiation-chemical formation of nitric oxide in the N_2-O_2 system was investigated from 0-1000C, at pressures of 0-150 atmospheres, reacting from 1-100 hours with radiation doses of 10^{12}-10^{19} ev/cm^3, using cobalt-60 of 20 kilocuries and a 200 kev electron accelerator. On increasing the temperature from 0-200C, the rate and energy yield of the reaction increase due to the decrease in the coefficient of the recombination of the ions. The effective energy of activation in the reaction of forming NO from N_2 and O_2 at 0-200C decreases with pressure, from 1.5 kcal/mol at 1 atm. to 0.2 kcal/mol at 150 atm. This is also caused by a

Card 1/2

ACCESSION NR: AP4032493

change in the conditions of ion recombination. At 200C the rate of radiation-chemical formation of NO is retarded due to the reverse reaction and consequent formation of NO_2 by oxidation of the NO. This reverse decomposition reaction also suppresses NO formation under established equilibrium conditions at low temperatures or when nitrogen oxides are added to N_2-O_2 system. On increasing the temperature from 200-700C the energy yield of NO decreases from 3.3 at 200C to 1.1 molecules/100ev at 600C due to the thermal decomposition of NO_2. At 700-1000C the radiation chemical rate of NO formation increases due to the supplemental thermal oxidation of nitrogen. Orig. art. has: 6 figures, 19 equations and 3 tables.

ASSOCIATION: None

SUBMITTED: 29Jan62 ENCL: 00

SUB CODE: IC, NP NO REF SOV: 007 OTHER: 002

Card 2/2

SOROKIN, Yu.A.; FSHEZHETSKIY, S.Ya.

Decomposition of ammonia by γ-rays. Zhur. fiz. khim. 38 no.3: 798-801 Mr '64. (MIRA 17:7)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L. Ya. Karpova.

L 23342-65 EWT(m)/T DIAAP BW

ACCESSION NR: AP5002001 S/0020/64/159/006/1385/1388

AUTHOR: Sorokin, Yu. A.; Kotov, A. G.; Pshezhetskiy, S. Ya.;

TITLE: Study of radiolysis of ammonia adsorbed on surfaces of solids, by the method of electronic paramagnetic resonance

SOURCE: AN SSSR. Doklady, v. 159, no. 6, 1964, 1385-1388

TOPIC TAGS: ammonia radiolysis, matrix effect, electronic paramagnetic resonance, γ irradiation, radiolysis, cobalt 60

ABSTRACT: The effectiveness of utilization of the energy of nuclear radiation for chemical reactions is increased by the use of solid sorbents. However, the mechanism of the sensibilization is not clear. The authors investigated processes which take place on γ-irradiation of ammonia adsorbed in zeolite. Specimens of zeolite with adsorbed ammonia were irradiated with Co^{60} at the temperature of liquid nitrogen. The epr-spectrum were recorded. The spectrum of zeolite is a weakly anisotropic singlet. The spectrum of zeolite with adsorbed ammonia

Card 1/2

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ACCESSION NR: AP5002001

show a fine structure. With the increase of ammonia amount, this distortion is increased, and the original singlet disappears. The radical NH_2 in argon shows a different epr-spectrum (triplet) than in water and in zeolite. The differences could be explained by the effect of the matrix on the rotational degrees of freedom of NH_2. The formation of NH_2 apparently depends not only on the direct radiolysis, but also on the energy transfer from zeolite. Orig. art. has: 3 figures

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physical Chemical Institute)

SUBMITTED: 18Jul64 ENCL: 00 SUB CODE: GC, NP

NR REF SOV: 002 OTHER: 006

Card 2/2

L 46647-66 EWT(m)/EWP(j)/T IJP(c) WW/RM

ACC NR: AR6021269 SOURCE CODE: UR/0081/66/000/004/S083/S083

46
45

AUTHOR: Sorokin, Yu. A. 15

TITLE: Effect of atmospheric conditions on long term durability and deformation of plastic 15 B

SOURCE: Ref zh. Khim, Part II, Abs. 4S523

REF SOURCE: Sb. Inzh. konstruktsii. Doklad k XXIII Nauchn. konferentsii. Leningr. inzh.-stroit. in-ta, L., 1965, 202-206

TOPIC TAGS: plastic, mechanical fatigue, compressive stress, bending stress, impact stress, elastic modulus, tensile stress, material deformation, structural mineral product

ABSTRACT: To determine durability characteristics under the combined effect of loading and atmospheric factors, prolonged bench tests were carried out on brand PA plastic (plasticized with up to 92% translucence) under loads of 0.1 - 0.7σ_{crit} under laboratory and atmospheric conditions on samples having the following dimensions: for compression -- 18 mm high prism with 10 x 10 mm base; for flex -- 100 mm long strip with 15 x S mm cross-section; for stress -- paddle-shaped piece narrowed to 4 x S mm whereupon the load was applied directly to the sample with the help of a

Card 1/2

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ACC NR: AR6021269

1 15

hinged hanger; impact strength was determined according to GOST 4647-62. The following were used for deformation measurements; for stress -- a comparator; for flex -- a gauged checking device, and a general purpose instrument for determining modulus of elasticity. Number of samples tested for each condition -- 20. The modulus of elasticity was determined for each sample before the long term tests. It was shown that the curves of deformation under stress and flex have an attenuated character and reflect variations in temperature and weather conditions. Moduli of elasticity under 0.1 - 0.3σ_{crit} loads differ little in laboratory and atmospheric exposure, but under greater loading the discrepancy in the degree of reduction amounts to 60%. The physical-mechanical properties of the plastic samples were insignificantly lowered in tests without loading run during the course of a year on the plant roof: tensile strength was reduced 1.5%, impact strength 2%, and bending strength was not reduced. The physical-mechanical properties of the plastic were reduced after 1000 hours in the weatherometer. It was established that it is possible to use plastic in dome and panel construction under Leningrad climate zone conditions although strength and deformation indices for the material under estimated load under atmospheric conditions differ for laboratory data, but are within limits of standard specifications. L. Kotlyarevskaya. [Translation of abstract]

SUB CODE: 11, 13

Card 2/2 egh

4

L 14943-66 EWT(l)/EWT(m)/EPF(c)/EWP(i)/EWP(j)/T/EWP(t)/EWP(z)/EWP(b)/EWA(h)
ACC NR: AP5025697 IJP(c) JD/HW/JG/ SOURCE CODE: UR/0286/65/000/018/0047/0047

AUTHORS: Artemov, A. N.; Yermolayev, V. I.; Mazarova, R. G.; Petukhov, G. G.; Razuvayev, G. A.; Solov'yev, I. F.; Solov'yeva, N. A.; Sorokin, Yu. A.; Tyutyayev, I. N.

ORG: none

TITLE: Method for manufacturing film type electrical resistors. Class 21, No. 174697

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 47

TOPIC TAGS: electric resistor, chromium, nickel

ABSTRACT: This Author Certificate presents a method for manufacturing thin film electrical resistors by vacuum deposition of Cr^2 and Ni onto an insulating base. To improve the adhesion of the metal film to the insulating base and to decrease the thermal resistance coefficient, dibenzylchromium $(C_6H_6)_2$ Cr is mixed with dicyclopentadienylcarbonylnickel $(C_5H_5Ni(C\beta))_2$ in the ratio 1:(2.5-2.7), and the

Card 1/2 UDC: 621.316.849.539.216.2.002.2

L 17902-66 EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWP(t)/EWP(b) IJP(c)/RPL JD/BW

ACCESSION NR: AP5021419 WW/JW/JG/JWD/WE/RM UR/0076/65/039/008/1955/1959 51 48
541.15

AUTHOR: Sorokin, Yu. A.; Pshezhetskiy, S. Ya. B

TITLE: Kinetics and sensitization of the radiolysis of ammonia in the gas phase under the influence of fast electrons

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 8, 1965, 1955-1959

TOPIC TAGS: ammonia radiolysis, hydrazine, rare gas, electron radiation, propylene

ABSTRACT: The kinetics of decomposition of ammonia and formation of hydrazine in the gas phase under the influence of fast electrons were investigated at room temperature. As the pressure rises, the reaction order changes from first to zero. The activation energy of the reaction is close to 1 kcal/mole. The kinetics of the reaction were interpreted with the aid of elementary processes involving the participation of NH_2 radicals. The sensitization of ammonia radiolysis by rare gases (Ne, Ar, Xe) and propylene was studied. Energy is transferred from the rare gases to ammonia with an 80% efficiency. Propylene in amounts of a few percent enhances the formation of hydrazine and depresses the reactions of decomposition of ammonia which

Card 1/2 7,44,55

L 17902-66

ACCESSION NR: AP5021419

lead to the formation of molecular nitrogen and hydrogen. The effect of propylene involves the capture of atomic hydrogen and radicals. A substantial decomposition of hydrazine was found to take place at the walls of the reaction vessel. Orig. art. has: 8 figures and 11 formulas.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 26May64 ENCL: 00 SUB CODE: GC,NP

NO REF SOV: 002 OTHER: 003

jc

Card 2/2

SOROKIN, Yu.A.; PETUKHOV, G.G.

Remarks on the synthesis of bis-alkylbenzene π-complexes of chromium. Zhur.ob.khim. 35 no.12:2135-2137 D '65. (MIRA 19:1)

1. Submitted January 11, 1965.

L 7961-66 EWT(1)/EWA(h)
ACC NR: AP5025701 SOURCE CODE: UR/0286/65/000/018/0048/0048

AUTHOR: Sorokin, Yu. F.

ORG: none

TITLE: Static converter. Class 21, No. 174703 [announced by State Committee for Radio Electronics, SSSR (Organizatsiya gosudarstvennogo komiteta po radioelektronike SSSR)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 18, 1965, 48

TOPIC TAGS: voltage regulator, voltage stabilization

ABSTRACT: This Author Certificate presents a static converter with pulse-width stabilization of the output voltage and frequency stabilization. The converter contains a power amplifier, a master oscillator, and a voltage regulator. To increase the efficiency and amplification factor with power, the master oscillator is in the form of two asymmetric full-wave self-excited oscillators. The primary half-windings of the oscillators are supplied through the voltage regulator triode, operating in the linear mode, during the half-period of cutoff of the power amplifier triodes.

Card 1/2 UDC: 621.314.5:621.315.592

L 7961-66

ACC NR: AP5025701

SUB CODE: EC/ SUBM DATE: 25Aug64

OC

Card 2/2

SOROKIN, Yu.F.; [illegible]

[illegible] from the deposit "[illegible]yanskaya Seredovina." [illegible]p. [illegible] ch.94 no.6:69[illegible]-697 '65. (MIRA 18:12)

1. [illegible] mineralogii i kristallografii Gornogo instituta, [illegible]. 2. Deystvitel'nyy chlen Vsesoyuznogo mineral[illegible] obshchestva ([illegible]rokin).

PRIKAZCHIKOV, L.A.; SOROKIN, Yu. G.; MOSKALYUK, A.A.; VESEL'YEV, A.S.

Giant quartz crystal from a pegmatite body. Zap. Vses.min. ob-va 93 no. 2:212-219 '64. (MIRA 17:6)

SORCKIN, Yu.I.; TSEYTLIN, Kh.L.

Apparatus for determining the wear of materials in a fluidized bed. Zav.lab. 27 no.8:1044-1045 '61. (MIRA 14:7)

1. Institut organicheskikh poluproduktov i krasiteley imeni K.Ye. Voroshilova.
(Materials--Testing) (Fluidization)

S/080/62/035/003/012/024
D217/D302

18.8300

AUTHORS: Sorokin, Yu. I. and Tseytlin, Kh. L.

TITLE: Influence of organic activators and inhibitors on the crevice-corrosion of metals by hydrochloric acid

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 3, 1962, 573-576

TEXT: The rate of corrosion was determined by the IFKh method of the A USSR. Discs of unsaturated graphite with slits cut in them were used to cover a steel plate which was rotated continuously in the corroding medium at 100 r.p.m. Specimens for corrosion were screwed into the crevices with graphite screws. 600 ml of pure 20% HCl solution containing 6 g of pure organic additive were used as the corroding medium. The tests were performed on carbon steel and lead at temperatures of 20° and 60°C, over 3 hours. Nitrobenzene, o-nitrotoluene and p-nitrochlorobenzene were used as organic activators, while formaldehyde (40% solution), urotropin and ПБ-5 (PB-5) were used as inhibitors. It was found that organic nitrocompounds (depolarizers of the cathode process) intensify the cor-

Card 1/2

rosion of lead and steel by hydrochloric acid both in the bulk and in the crevices. The activating action of nitrocompounds in narrow crevices is considerably less than in the bulk. In the presence of activators, the rate of corrosion of metals in crevices is, therefore, less than that in the bulk. Organic inhibitors diminish the corrosion of steel by hydrochloric acid not only in the bulk but also in the crevices. The retarding action of inhibitors in narrow crevices is considerably less than in the bulk. Thus, in the presence of inhibitors, the corrosion of metals in crevices is greater than in the bulk. The above influences of organic activators and inhibitors on crevice corrosion in metals is due to the difficulty with which they are transported to the affected areas. There are 2 tables and 14 Soviet-bloc references.

ASSOCIATION: Institut organicheskikh poluproduktov i krasiteley (Institute of Organic Semi-Products and Dyes)

SUBMITTED: January 30, 1961

S/056/62/043/005/006/058
B163/B186

AUTHORS: Sorokin, Yu. I., Shevchenko, V. G., and Yur'yev, B. A.

TITLE: Cross section for photoproton reactions in lead

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 5(11), 1962, 1600-1603

TEXT: In order to study the shape of the quadrupole giant resonance curve, the total yield curves for the (γ,p) reactions on Pb^{207} and Pb^{208}, and the (γ,pn) and (γ,d) reactions on Pb^{208} were measured by recording the induced β^+ activity. Similar measurements at γ energies up to 27 Mev have been made earlier by Cameron et al. (Phys. Rev. 83, 1264, 1951) who succeeded in discovering only the ascending branch of the curve. In this experiment, lead discs of 14 and 30 mm diameter were irradiated within a distance of 50 cm from the target of the 35 MeV NIIYaF MGU betatron. The maximum energy of the bremsstrahlung from the target was variied from 0.5 to 33.5 Mev. The irradiated disc specimens were arranged between two β-counters measuring the induced activity of

Card 1/3

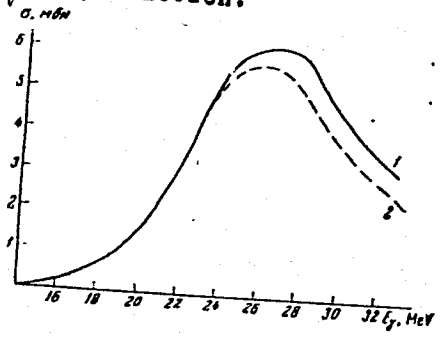
Tl^{206} and Tl^{207}. From the total yield curve the energy dependence of the total cross section for photonuclear reactions on Pb^{207} and Pb^{208} was calculated using the matrix method of Penfold and Leiss (Analysis of photo cross section, University of Illinois, 1958). The contribution of the (γ, pn) and (γ, d) reactions to the total cross section was estimated. Fig. 2 shows the energy dependence of the cross section before and after correction for the (γ, pn) processes. The (γ, d) cross section was neglected for all energies. It is of interest that the maxima of the cross section curves are situated at energies 12 - 13 Mev above the maximum of the dipole giant resonance. They are also clearly above theoretical estimates (17 - 21 Mev) previously calculated by the authors for the maximum of the cross section of basic quadrupole transitions in heavy nuclei according to the one-particle model. The integral cross sections for the complete reactions and the (γ, p) reactions which equal 60 and 55 Mev·mbarn respectively, are consistent with estimates made by Khokhlov's summation rule for quadrupole transitions (Yu. K. Khoklov, ZhETF 32, 124, 1957). There are 2 figures.

Cross section for photoproton ... S/056/62/043/005/006/058
B163/B186

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of the Moscow State University)

SUBMITTED: June 23, 1962

Legend of Fig. 2. Cross section of photonuclear reactions on lead: 1 - cross section calculated from the total yield curve, 2 - cross section for the (γ, p) reaction.



Card 3/3

ACCESSION NR: AR4015642 S/0081/63/000/022/0361/0361

SOURCE: RZh. Khimiya, Abs. 22K24

AUTHOR: Tseytlin, Kh. L.; Strunkin, V. A.; Fayngol'ts, L. L.; Sorokin, Yu. I.; Babitskaya, S. M.; Zal'tsman, T. D.

TITLE: Chemical stability of titanium in some corrosive media

CITED SOURCE: Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta po khimii pri Gosplane SSSR, no. 3, 1963, 30-32

TOPIC TAGS: titanium, titanium chemical stability, corrosion, corrosion resistance, titanium corrosion, halogen, halogen corrosion, chlorination, bromination

TRANSLATION: Experimental data are given on the rate of Ti corrosion in the presence of free halogens and in the halo acids and sulfuric acid containing free halogen. Areas of application of Ti in the chemical industry are pointed out. Ti is recommended as a construction material for equipment designed for chlorination in an HCl medium at concentrations up to 20% and temperatures up to 60C, in the presence of less than 3 g free Cl_2 per liter HCl. Ti tips are used on

Card 1/2